

REMARKS

In the Office Action, claims 2-3, 7-12, and 14-17 were objected to because of certain informalities. Claims 1 and 13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Forssen et al. (U.S. Patent 6,031,490). Claims 2-12, and 14-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Forssen et al. (U.S. Patent 6,031,490) in view of Richards et al. (U.S. Patent 6,466,125). By the present response, claims 2-4, and 6-18 have been amended. Upon entry of the amendments, claims 1-21 will remain pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

Objections to the Drawings

Applicants note that in the Office Action Summary, the drawings were indicated as objected to by the Examiner (see the checked boxes). However, no objections were formulated by the Examiner in the Office Action. Applicants believe that the drawings are acceptable, and if such indication was erroneous, would simply ask that the Examiner indicate the acceptability of the drawings as filed.

Claim objections due to informalities

In the Office Action, claims 2-3, 7-12, and 14-17 were objected to due to certain informalities. Claim 2-3, 7, 9-12, and 14-17 have been amended to obviate the objections raised in the Office Action. In particular, terms corresponding to the acronyms have been placed in the claims. No new matter has been added. Thus reconsideration and allowance of amended claims is requested.

Rejections Under 35 U.S.C. § 102

Independent claims 1 and 13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Forssen et al. (U.S. Patent 6,031,490). Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. Applicants

respectfully assert that the present invention, as claimed in independent claims 1 and 13, is patentable over the Forssen et al. reference.

Claim 1

Claim 1 is clearly distinguishable from the teachings of Forssen et al. In particular, the Forssen et al. reference does not teach, disclose or suggest at least “calculating, at each of the at least three receivers, time difference of arrival information based on the signal from said at least one beacon transmitter and the RF signal transmitted from the object”, as recited in claim 1. Instead, the Forssen et al. reference teaches calculating time of arrival only of the signals transmitted by the mobile terminals to base stations.

In particular, as set forth in column 8 of Forssen et al.:

The mobile terminal's position can be estimated from the TOA and/are DOA measurements performed in one BS. Alternatively, the TOA and DOA measurements of a plurality of BSs can be combined in order to estimate the mobile terminal's position. Forssen et al., column 8, lines 22-26.

Furthermore, Forssen et al. specifically teach how the processing is to be carried out in this method. According to the reference:

The SN 103 includes a processor 103a, which further includes a receiving unit 103b, storing unit 103c, sending unit 103d, and respective first and second calculating units (103e, 103f). The first calculating unit 103e calculates the TDOA of the signals received on the uplink by the radio base stations, wherein the first calculating unit 103e uses reported TOAs. The second calculating unit 103f calculates the position of the mobile radio terminals using the TDOA information and (optionally) any reported DOA information available. The storing unit 103c maintains the known geographical locations of the radio base stations. Forssen et al., column 8, lines 41-51.

Thus, Forssen et al. teach a system in which time of arrival calculations are made between a mobile telephone and base stations. It is these time of arrival calculations *only* that are used to determine the location of the telephone.

This is made even more clear later in the reference, where one reads:

At step 509, the MSC 102 determines which (e.g. three) BSs are to take part in the position determination process and requests TOA measurements from at least three specified radio base stations, such as BS1, BS2 and BS3 via connections 101 and indicating the traffic channel number concerned. The control section 110 in each of the three BSs requests the ModRX 130 to determine the position of a mobile radio terminal on the specified channel. At step 511, the three BSs perform measurements in accordance with a known TOA measurement method and report the resulting measurement information to the MSC 102 together with the associated channel number (CHN). At step 413, the MSN 102 translates the CHN to a mobile radio terminal identity (MS-ID) making use of a look up table 109 in the MSC. At step 515, the MSC sends the measurements to the radio base stations BS1, BS2 and BS3 together with the MS-ID to the SN 103. At step 517, the SN 103 calculates the position of the mobile terminal 108, in accordance with a known triangulation algorithm. Forssen et al., column 10, line 66 through column 11, line 17.

Nowhere does the Forssen reference teach, disclose or suggest calculating time difference of arrival information based on a signal from a beacon transmitter and an RF signal transmitted from an object together. Indeed, no such beacon transmitter is used by Forssen et al. Therefore, the present invention, as claimed in independent claim 1 is not anticipated by the Forssen reference. Thus, it is respectfully requested that the rejection of Claim 1 under 35 U.S.C. §102(b) be withdrawn.

Claim 13

Claim 13 was similarly rejected under 35 U.S.C. § 102(b) as being anticipated by Forssen et al. Applicants respectfully assert that the present invention, as claimed in independent claim 13, is patentable over the Forssen et al. reference.

In particular, the Forssen et al. reference does not teach, disclose or suggest at least the claimed “at least three base stations within said area of interest, each of said at least three base stations comprising a detector for detecting the RF signal transmitted from said mobile device, and further comprising a processor for deriving time difference of arrival information based on the beacon signal and the RF signal”. Instead, the Forssen et al. reference teaches calculating time of arrival of the signals transmitted by the mobile terminals only to the base stations. As discussed above, nowhere does the Forssen reference teach, disclose or suggest calculating time difference of arrival information based on the beacon signal and the RF signal together.

Therefore, the present invention, as claimed in independent claim 13 is not anticipated by Forssen et al. reference. Thus, it is respectfully requested that the rejection of Claim 13 under 35 U.S.C. §102(b) be withdrawn.

Rejections Under 35 U.S.C. § 103

Claims 2-12, and 14-21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Forssen et al. (U.S. Patent 6,031,490) in view of Richards et al. (U.S. Patent 6,466,125).

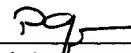
The claims rejected under this section all depend claims directly or indirectly from independent claims 1 and 13 discussed above. The Richards et al reference has been reviewed and is not believed to obviate the deficiencies of the Forssen et al. reference discussed above, particularly regarding the use of a beacon transmitter and the calculation of difference signals based upon signals from the beacon transmitter and from base stations. Accordingly, Richards et al. does not obviate the deficiencies of Forssen et al. in this regard. Consequently, all of the dependent claims are believed to be patentable both by virtue of their dependency from an allowable base claim, as well as for the subject matter they separately recite. Reconsideration and allowance of all of the dependent claims on this basis are requested.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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